

In[134]:=

```
a = 4;
b = 5.2;
n = 10;

(* Step size *)
h = (b - a)/n;

(* Function *)
f[x_] := Log[x];

(* Summations *)
sumOdd = 0;
For[i = 1, i < n, i += 2,
  sumOdd += f[a + i*h];
];

sumEven = 0;
For[i = 2, i < n, i += 2,
  sumEven += f[a + i*h];
];

(* Simpson's rule formula *)
S = (h/3) * (f[a] + f[b] + 4*sumOdd + 2*sumEven);

Print["For n = ", n, ", Simpson 1/3 estimate is : ", N[S]];

trueValue = N[Integrate[Log[x], {x, a, b}]];
Print["True value is ", trueValue];

Print["Absolute error is ", Abs[S - trueValue]];

For n = 10, Simpson 1/3 estimate is : 1.82785
True value is 1.82785
Absolute error is  $5.46211 \times 10^{-9}$ 
```